

CLAIMS

New claims:

16. A method for a post-treatment of exhaust gas produced by
1 an internal combustion engine in a motor vehicle, comprising the steps of
3 obtaining hydrogen by a hydrolysis unit connected to a water tank; delivering
4 a metered addition of the hydrogen to an exhaust gas as a function of a
5 demand for hydrogen occurring at certain operating states and/or functions
6 of a catalytic converter; performing the delivery of the hydrogen in a direction
7 of flow of the exhaust gas at a location selected from the group consisting of
8 between an oxidation catalytic converter and an NOx storage catalytic
9 converter, upstream of the oxidation catalytic converter and upstream of the
NOx storage catalytic converter, and upstream of the oxidation catalytic
converter and a particle filter of an exhaust-gas line.

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17. A method as defined in claim 16; and further comprising
producing a quantity of hydrogen required in each case on demand in the
hydrolysis unit; and making available directly for metering.

18. A method as defined in claim 17; and further comprising providing a hydrogen tank that stores a certain quantity of the hydrogen produced by a hydrolysis unit.

19. A method as defined in claim 18; and further comprising dimensioning a quantity of hydrogen in the tank so that it suffices to heat and regenerate the NOx storage catalytic converter.

20. A method as defined in claim 16; and further comprising registering a temperature of the exhaust gas and certain operating states of the catalytic converters.

21. A method as defined in claim 16; and further comprising providing regeneration phases in the NOx storage catalytic converter including adding hydrogen to an untreated exhaust gas at certain intervals and in a quantity required in each case.

22. A method as defined in claim 16; and further comprising for the internal combustion engine formed as a diesel engine, activating an addition of hydrogen to the exhaust gas when hydrocarbon can not be produced using internal processes.

23. A method as defined in claim 16; and further comprising for the internal combustion engine formed as a gasoline engine, initiating an additional hydrogen to the exhaust gas when an engine operating point at a moment does not allow hydrocarbons to be made available using internal processes at a sufficient temperature.

24. A method as defined in claim 16; and further comprising regenerating oxidation stages of the storage catalytic converter or the particle filter by means of hydrogen reduction, to restore a sufficient conversion rate after sulphur poisoning, at oxidation stages at the Nox storage catalytic converter or the particle filter.

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25. A method as defined in claim 24; and further comprising activating the regeneration after a decrease in a conversion rate of the NOx storage catalytic converter or the particle filter is registered.

26. A method as defined in claim 16; and further comprising raising an exhaust-gas temperature in order to guarantee that regeneration conditions are met when the particle filter is employed while the engine operates under low-load condition and temperatures therefore is a crucial factor.

27. An apparatus for a post-treatment of an exhaust gas of an internal combustion engine in a motor vehicle, comprising a hydrolysis unit, a metering device connected to said hydrolysis unit via a hydrogen line for a metered addition of hydrogen to an exhaust gas; and a control/regulating unit that is functionally connected to said hydrolysis unit and said metering device in order to control or regulate a production of hydrogen in said hydrolysis unit and said metering device as a function of certain operating states of the internal combustion engine and registered parameters of an exhaust-gas system; and additional points at which hydrogen is added to the exhaust gas, provided in a direction of flow of the exhaust gas at a location selected from the group consisting of upstream of an oxidation catalytic converter, between the oxidation catalytic converter and an NO_x storage catalytic converter, and upstream of the oxidation catalytic converter and a particle filter.

28. An apparatus as defined in claim 27, wherein said metering device is formed as a metering and shutoff valve.

29. An apparatus as defined in claim 27; and further comprising a hydrogen intermediate storage tank connected downstream of said hydrolysis unit in order to store a certain quantity of hydrogen.

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30. An apparatus as defined in claim 27, wherein said control/regulating unit comprises a catalytic converter monitoring function that is functionally connected to an exhaust-gas sensor system.